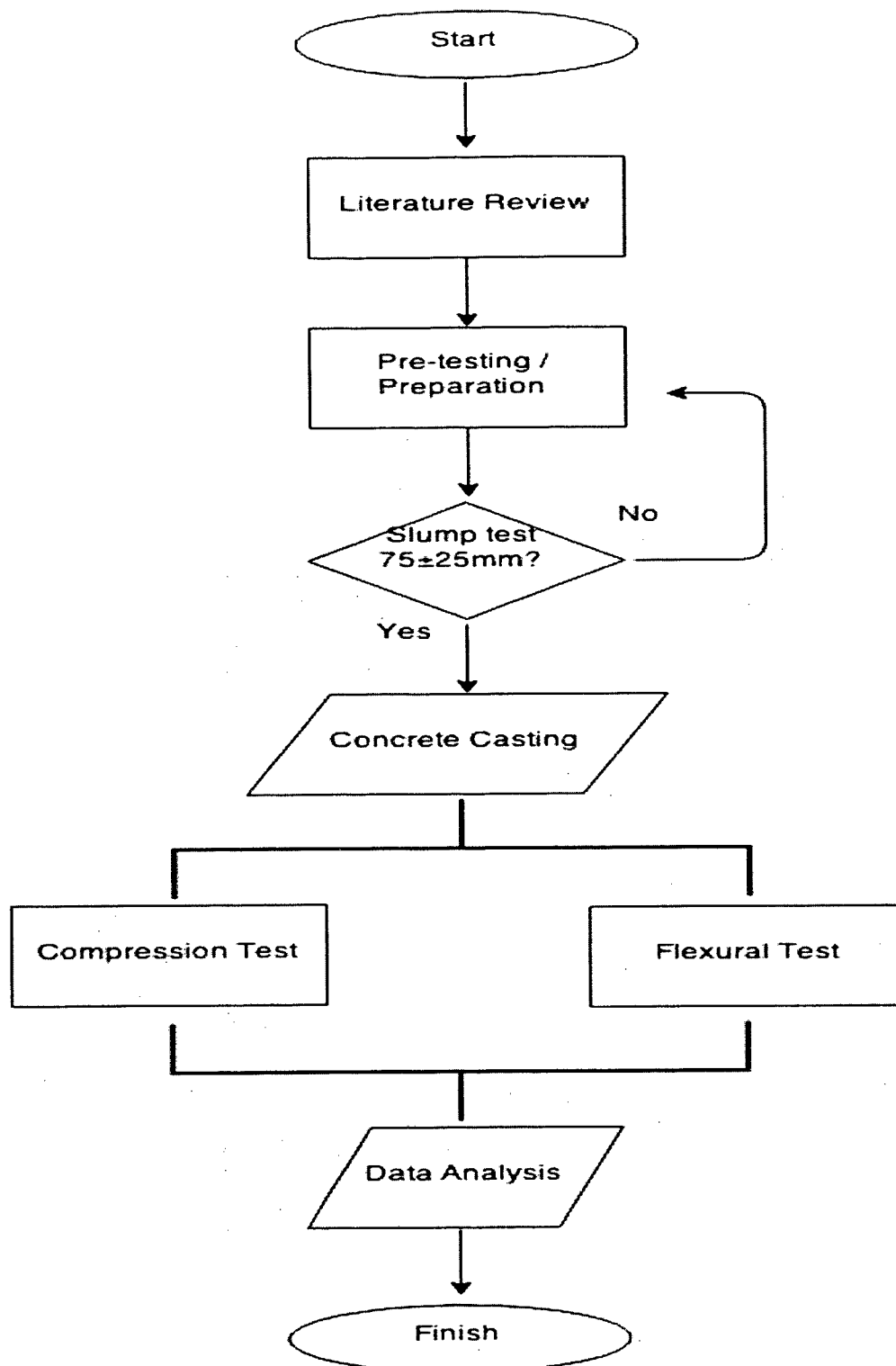


## **CHAPTER 3**

### **RESEARCH METHODOLOGY**

#### **3.0 INTRODUCTION**

This chapter reviews the details of methodology used to examine the performance of concrete added with bamboo fibre through experiments and tests. Most of the methodology and findings from this field are mainly profound from the journals and thesis, and they serve the purpose of improving the upcoming studies. The aim of this research is to collect data through slump test, compressive strength test, and flexural strength test. The British, ASTM, European and Malaysian standards will be used to support the properties of materials and physical tests. The research methodology flow chart was shown in Figure 3.1.



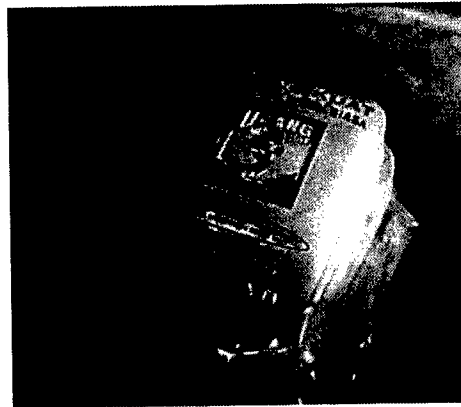
**Figure 3.1:** Research methodology flow chart

### 3.1 MATERIALS

The materials selected to undergo this study are Ordinary Portland cement, sand (fine aggregate), crushed granite (coarse aggregate), bamboo fibre (additive) and water. Bamboo will serve as an additive or additional material in the concrete. The appropriate amount of water will be used in concrete mixing and curing process.

#### 3.1.1 Ordinary Portland cement

Ordinary Portland cement (OPC) will be the main material used through this study. Meanwhile, the Ordinary Portland cement produced by YTL has been selected as certified to MS 522-1: 2007 (EN 197-1: 2000), CEM I 42.5 N/ 52.5 N and MS 522: Part 1:2003. The packaging of Ordinary Portland Cement is shown in Figure 3.2.



**Figure 3.2:** Ordinary Portland cement, “Orang Kuat” brand

#### 3.1.2 Coarse aggregate

The coarse aggregate used in this study was the crushed granite displayed in Figure 3.3. As discussed earlier in Chapter 2, subheading 2.4.1, the size and shape of the coarse aggregate would affect the properties of the concrete. Therefore, crushed granite was selected due to its angular shape. Also, the crushed granite was sieved to acquire the desired size wherein the granite must pass 20 mm sieve size, while retained in 5 mm. In other words, the maximum size of the crushed granite used in this was 20 mm, while the minimum size was 5 mm.